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Group Art Unit: 2822

AMENDMENT

IN THE SPECIFICATION:

- Please replace the paragraph which begin on page 5, line 12, of the specification with the following clean amended paragraph:

B1
In another embodiment, the semiconductor wafer 54 is subject to the mechanical pressure of the roller 56, which is heated to provide thermal energy. The roller 56 rotates in the direction indicated by the arrow 60 in FIG. 3 and also traverses as indicated by the arrow 70 in FIG. 4.

IN THE CLAIMS:

- Please cancel claims 1 and 7.
- Please replace pending claims 2-6 and 8-14 with the following clean amended claims 2-6 and 8-14:

C17
B2
2. (Amended) A method for planarization of ILD layers on a semiconductor wafer comprising:

providing an oven having a wafer holder provided therein;
placing the semiconductor wafer on the wafer holder;
applying mechanical pressure to the ILD layer on the semiconductor wafer using a mechanical device, the applying the mechanical pressure includes providing rotary and traverse motion between the mechanical device and the ILD layer on the semiconductor wafer to assist in planarization; and
applying heat to the ILD layer on the semiconductor wafer using the mechanical device simultaneously with the applying the mechanical pressure.

3. (Amended) The method as claimed in claim 2 wherein:
applying the mechanical pressure includes providing non-sticking motion and transferring heat between the mechanical device and the ILD layer on the semiconductor wafer to assist in planarization.

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4. (Amended) The method as claimed in claim 2 wherein:
applying the heat includes sensing and controlling the temperature of the mechanical
device.

5. (Amended) The method as claimed in claim 2 wherein:
applying the mechanical pressure uses a top plate as part of the mechanical device.

6. (Amended) The method as claimed in claim 2 wherein:
applying the mechanical pressure uses a roller as part of the mechanical device.

8. (Amended) A method for planarization of ILD layers on a semiconductor
wafer comprising:

providing an oven having a rotatable wafer holder provided therein;

placing the semiconductor wafer on the wafer holder;

rotating the wafer holder with the semiconductor wafer thereon;

spinning on the low dielectric constant ILD material on to the semiconductor wafer in
the oven;

soft baking the low dielectric constant ILD material at a soft bake temperature in the
oven;

holding the low dielectric constant ILD material at a temperature below the hard back
temperature in the oven;

applying mechanical pressure to the ILD layer on the semiconductor wafer using a
mechanical device to apply rotating pressure to the ILD layer in the oven, the
applying the mechanical pressure includes providing rotary and traverse
motion between the mechanical device and the ILD layer on the
semiconductor wafer to assist in planarization;

applying heat to the ILD layer on the semiconductor wafer through the mechanical
device simultaneously with the applying the mechanical pressure in the oven;

hard baking the low dielectric constant ILD material at a hard bake temperature in the
oven;

cooling the low dielectric constant ILD material in the oven; and

annealing the low dielectric constant ILD material in the oven.

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9. (Amended) The method as claimed in claim 8 wherein:
applying the mechanical pressure includes providing non-sticking sliding motion and
transferring heat between the mechanical device and the ILD layer on the
semiconductor wafer to assist in planarization.
10. (Amended) The method as claimed in claim 8 wherein:
applying the heat includes infrared sensing and controlling the temperature of the
mechanical device through a phase lock loop temperature control.
11. (Amended) The method as claimed in claim 8 wherein:
applying the mechanical pressure uses a rotating and transversely moving top plate as
part of the mechanical device; and
applying the mechanical pressure is applied to cause reflow of the ILD layer.
12. (Amended) The method as claimed in claim 8 wherein:
applying the mechanical pressure uses a rotating and transversely moving roller as part
of the mechanical device; and
applying the mechanical pressure is applied to cause reflow of the ILD layer.
13. (Amended) The method as claimed in claim 8 wherein:
holding the low dielectric constant ILD material at a temperature below the hard back
temperature in the oven holds the temperature between 100°C and 400°C; and
exhausting volatile gases from the ILD material from the oven.
14. (Amended) The method as claimed in claim 8 wherein:
applying mechanical pressure uses a mechanical device having a consumable surface
in contact with the semiconductor wafer.